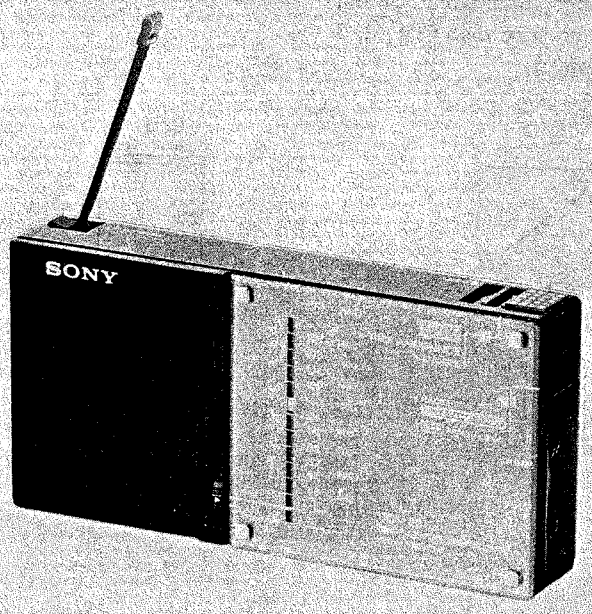
487/1

VX-1W

US Model
(REVISED)

Canadian Model
E Model
UK Model



FM/AM 2 BAND RECEIVER

SPECIFICATIONS

Frequency Range: FM 87.5 – 108 MHz
AM 530 – 1,605 kHz (566 – 187 m)

Antennas: FM: Roll antenna
AM: Built-in ferrite bar antenna

Clock System: Quartz-locked

Time Accuracy: Within ±15 seconds/month (at 25°C)

Speaker: Approx. 5 cm (2 inches) dia.

Power Output: 80 mW
(at 10% harmonic distortion)

Output: Earphone jack (minijack)
for 8-ohm earphone or load impedance
10 kilohms or higher

Power Requirements: Radio section
3 V dc, two batteries size AAA
(IEC designation R03)
120 V ac, 60 Hz with optional
Sony AC-39 ac power adaptor
110, 120, 220, 240 V ac,
50/60 Hz with optional Sony AC-38 ac
power adaptor
240 V ac, 50 Hz with optional
Sony AC-37 ac power adaptor
12 V car battery with optional
Sony DCC-127A car battery cord
Clock section
4.5 V dc, three batteries size AAA
(IEC designation R03)

Dimensions: Approx. 143 x 70 x 29 mm (w/h/d)
($5^5/_8$ x $2^7/_8$ x $1^1/_8$ inches)
excl. projecting parts

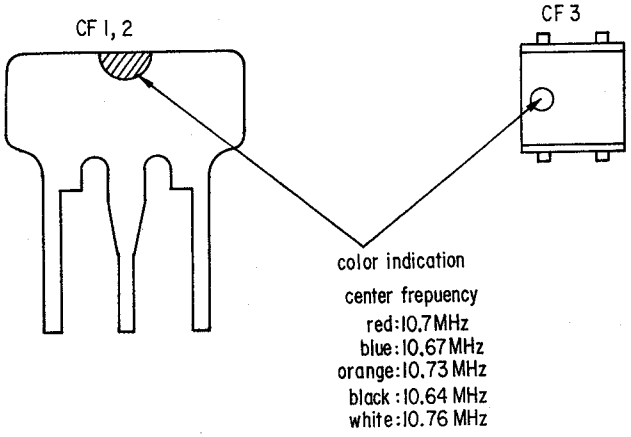
Weight: Approx. 265 g (10 oz)
incl. batteries

MICROFILM

SONY®
SERVICE MANUAL

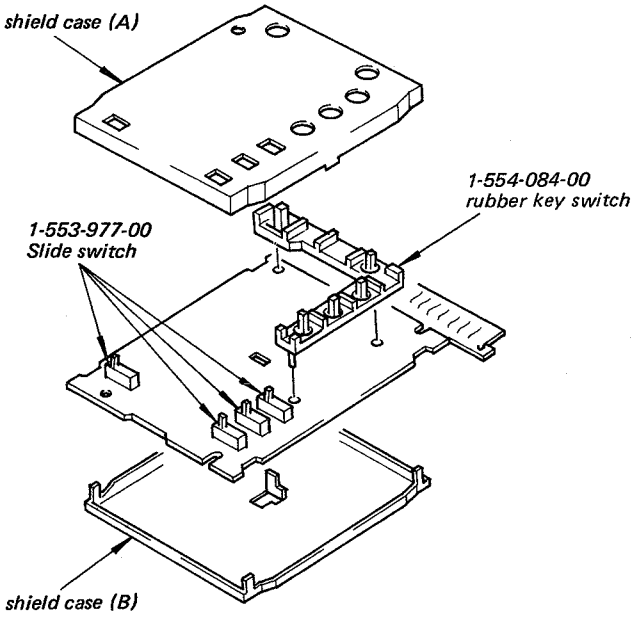
REPLACEMENT OF CERAMIC FILTER

When replacing the ceramic filter (CF1, 2) and ceramic discriminator (CF3) be sure that CF1, 2, 3 are all the same color indication.



REPAIR OF CLOCK MODULE

The clock module is supplied as a complete block. The switches are also supplied as separate parts.

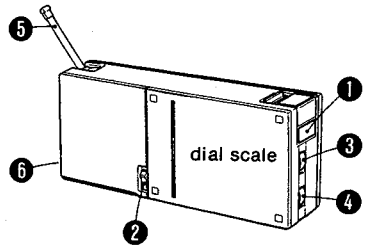


SECTION 1
OUTLINE

1-1. GENERAL DESCRIPTION

PARTS IDENTIFICATION

FOR RADIO RECEPTION



Operate ❶ to ❺ in sequence for reception.

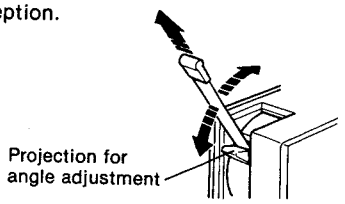
❶ RADIO ON/OFF (ALARM OFF) button
Push to turn the radio on. The radio will automatically turn off an hour later (60 MIN AUTO OFF function).
To turn off before this auto-off, push the button again.

❷ Band selector
Select the desired band; FM or AM.

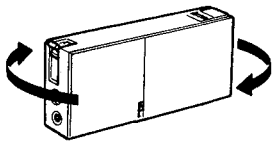
❸ TUNE (tuning) knob
Select the desired station, observing the dial scale.

❹ VOL (radio volume) control
Adjust the radio volume as required. This control has no effect upon the time announcement.

❺ FM ANTENNA
Pull out fully and adjust the angle with the projection at the base for best FM reception.

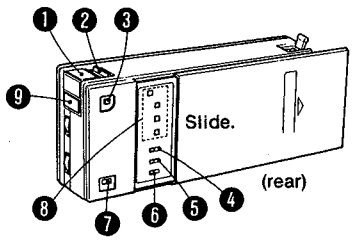


For AM reception, the built-in ferrite bar antenna is used. Push the FM antenna back in and rotate the set horizontally for optimum reception, if necessary.



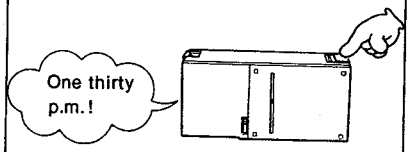
❻ ⓟ (earphone) jack
For private listening, connect the supplied earphone, which will then automatically disconnect the speaker.

FOR TIME ANNOUNCEMENTS



You can have the time announced even when the radio is on.

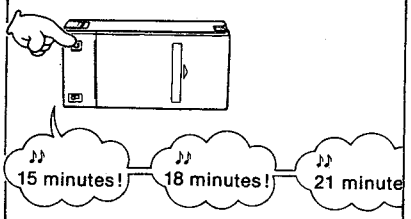
❶ TIME ANNOUNCE/SNOOZE button
Push to have the present time announced.



To cut the voice off immediately, push the button again.

❷ LOCK knob
Slide to lock the TIME ANNOUNCE/SNOOZE button when it is not being used. This will prevent accidental announcements of the time.

❸ 3 MIN. (minute) ANNOUNCE button
Push to have the minutes of the present time announced every three minutes.

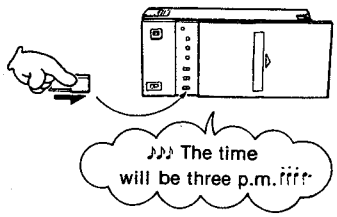


This mode will be automatically disengaged an hour later. To disengage manually, push the button again.
Note: In this mode, the hour will not be announced. Thus, "18 minutes" means 18 minutes past the hour. A peep sounds at "0" minutes.

❹ TIME selector
Normally, keep the selector in the PRESENT position. For checking or setting the alarm time, set it to ALM (alarm).

❺ ALM (alarm) switch
Set to ON to sound the alarm at the preset time every day.

❻ HOUR ANNOUNCE switch
Set to ON to have the time announced every hour on the hour.



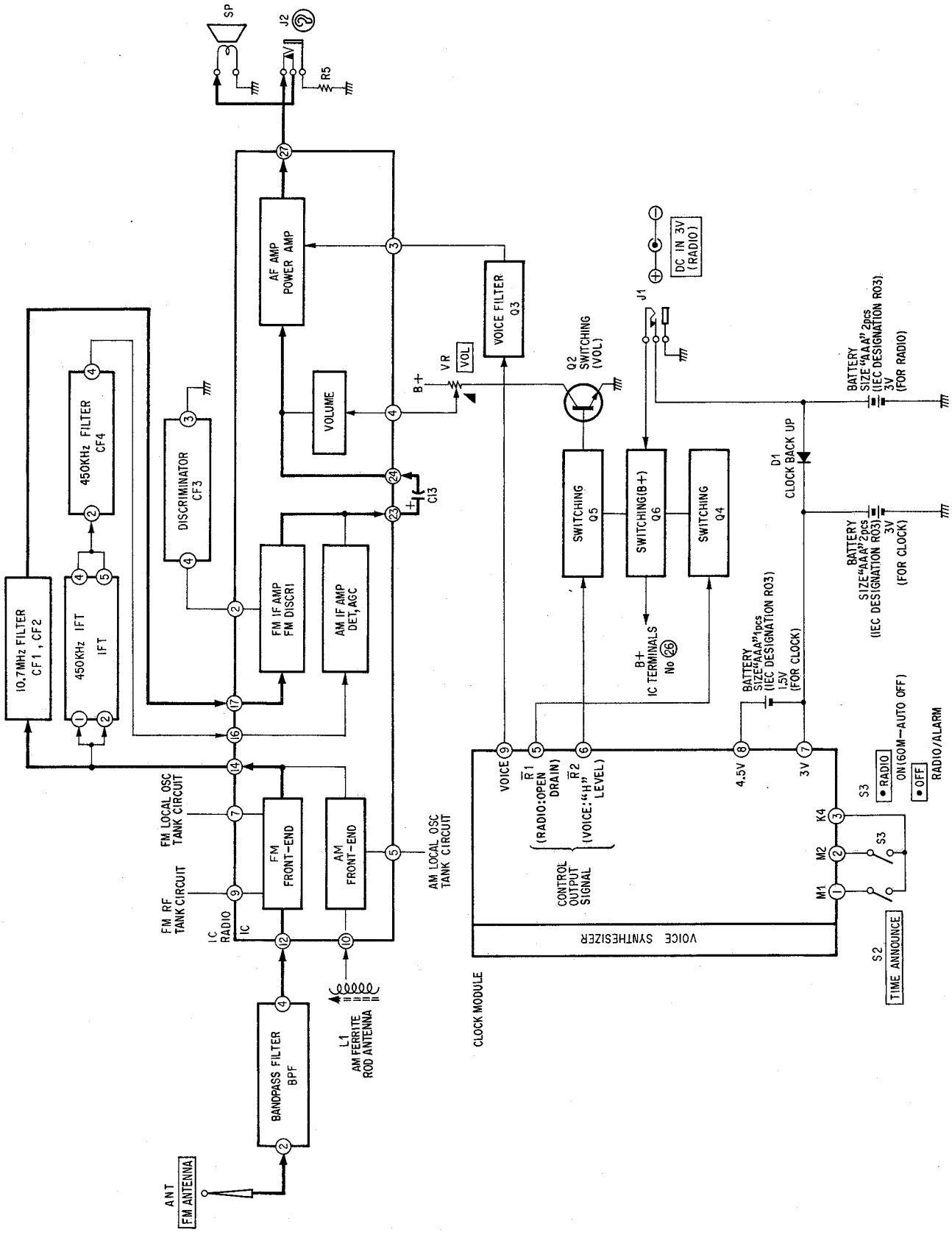
Note: After the hour time is announced, four beep tone will be heard. The final, higher-pitched tone indicates the exact hour.

❼ CLOCK VOICE loudness selector
Set to SOFT or LOUD as desired.

❽ TIME SET buttons
For setting the clock (the present time and the alarm time).

❾ ALARM OFF (RADIO ON/OFF) button
After the alarm begins to operate at the preset time, the button functions as a switch to turn off the alarm.

1-2. BLOCK DIAGRAM



1-3. CIRCUIT DESCRIPTION

VOICE SYNTHESIS

VX-1W is a portable AM/FM two band radio with a built-in voice synthesis LSI which announces the time in a woman's voice.

When attempting to faithfully transmit voice waves, generally, a large information capacity is required, so a language voice production mechanism and auditory perception characteristic are used to do away with voice redundancy. This voice creation method which compresses information capacity is called "voice synthesis".

The two main methods of voice creation are "wave encoding system" and "parameter encoding system". The wave encoding system is information compression done by using the waveforms themselves, and parameter encoding system performs information compression by converting the short time voice spectrum to parameter and storing it.

VX-1W employs the sound sampling synthesis method, which falls under the heading of the wave encoding system. Some of the reasons for using this method are:

- Acceptable voice quality can be obtained even when the bit rate is lowered.
- Because the digital filter, etc. seen in the parameter encoding system is not used, the voice information area can be enlarged for LSI, and other operations (sentence synthesis, judgement routine for voice production content, etc.) can be handled on onè chip.

As shown in Figure 1, the normal human voice is a repitition of similar waveforms with a basic cycle. The sound sampling synthesis method uses this property to extract one cycle from the section presumed to be the constant voice waveform as a representative sample (Figure 2), records it, and repeats connection as necessary (Figure 3) to compress information. The extraction of this representative sample is important for direct determination of quality of synthetic sound, and is performed by referring to a voice spectrum transition pattern calculated by computer.

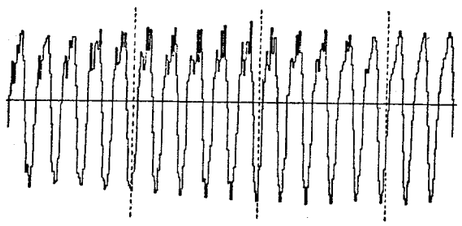


Fig. 1 Example of voice waves

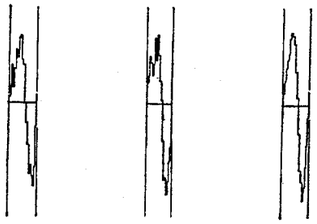


Fig. 2 Representative sample

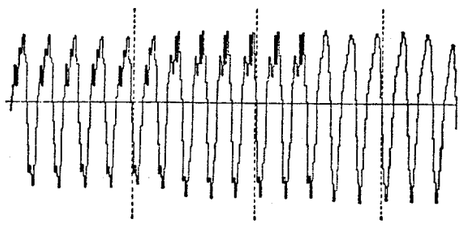


Fig. 3 Sound sample syhthetic waveform

For VX-1W, the representative sample obtained above is further differential quantized (DPCM) for information compression. This system encodes the difference (differential value) of the two sample values adjacent to the signal waveform. It then further nonlinear quantizes this differential value (12 bit) and compresses it to 4 bit. The quantum curve is determined by statistically obtaining the dispersion of the differential value. The synthesis system replaces this 4 bit DPCM data with 8 bit differential value, performs sequential addition as shown in Figure 4, and by D/A conversion, obtains voice output. Here, this 8 bit differential value is halved and added twice each, and the sampling frequency in the synthesis system is doubled equivalently from what it was during analysis. This simplifies the filter system which cancels return noise.

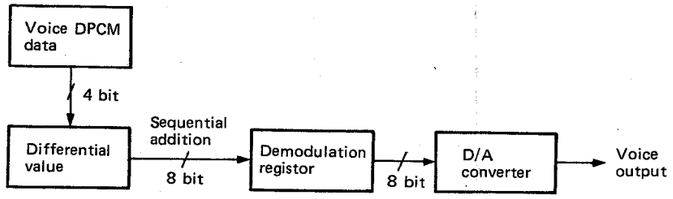


Fig. 4 Differential quantized synthesis system

The voice synthesis LSI consists of the ROM (4K byte) which houses compressed voice data and sentence synthesis data, the judgement routine program ROM (1K byte) for voice synthesis and sentence synthesis, an arithmetic circuit for signal handling, D/A converter, and interface circuit, etc. as shown in Figure 5.

The interface section can expand the external ROM for voice data to 16K byte, and also provides parallel input for operation even without serial input from the external controller, and provides BUSY output to inform whether voice is being produced or not.

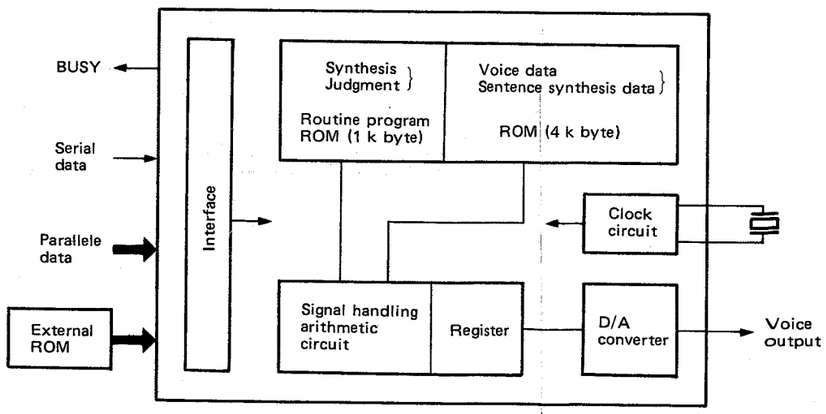


Fig. 5 Block diagram of voice synthesis LSI

The VX-1W block diagram is shown in Figure 6.

The clock LSI has a 4 bit microcomputer, which employs a crystal, in its oscillator, and by key input or the different modes (time announce, alarm, etc.) is programmed to send 16 bit serial data (Figure 6) including time information to the voice synthesis LSI. This LSI also performs power ON/OFF for itself, the radio receiver, and audio amp, only supplying power as necessary (energy-saving design). Also, when obtaining a voice synthesis announcement while listening to the radio, this power control output is used to mute the radio sound.

The voice synthesis LSI performs sentence construction based on the serial data, synthesizes voice data, and D/A converts and outputs.

For alarm announce or other cases when time is announced repeatedly, the clock LSI reads the BUSY output of the voice synthesis LSI (to tell if voice is being produced), and re-sends serial data.

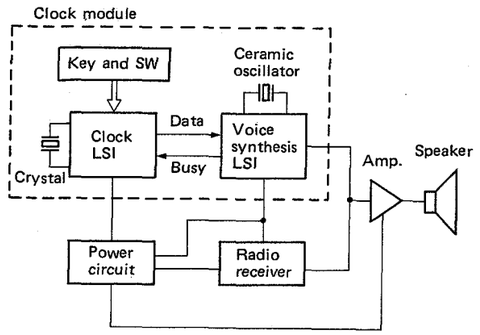


Fig. 6 VX-1W block diagram

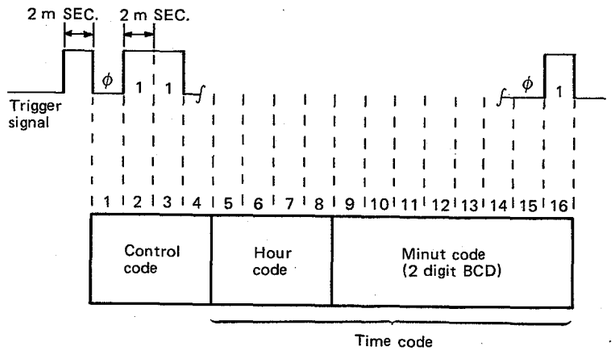


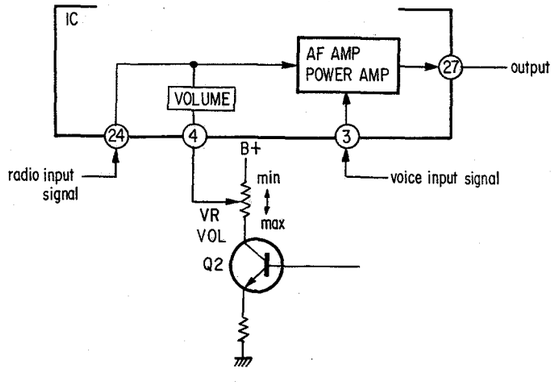
Fig. 7 Serial data input to voice synthesis LSI

ELECTRONIC VOLUME

The sound volume of this set is controlled by controlling the DC voltage of IC pin (4).

When the DC voltage rises, the volume goes down, and when it drops, the volume goes up.

Q2 is ON during radio function. During voice function it goes OFF, and the sound volume becomes minimum.



RADIO/VOICE SWITCHING

- RADIO mode

When S3 is turned ON, the clock module output pin (5) goes low (open drain output). This turns Q4 ON, Q6 turns ON, and B+ voltage is supplied to the radio section.

At the same time, when Q4 turns ON, Q2 turns ON and the sound volume (VR) operates.

When S3 is turned ON again, pin (5) goes high (open drain output) and Q4 turns OFF, Q6 turns OFF, B+ voltage is not supplied and the radio goes OFF.

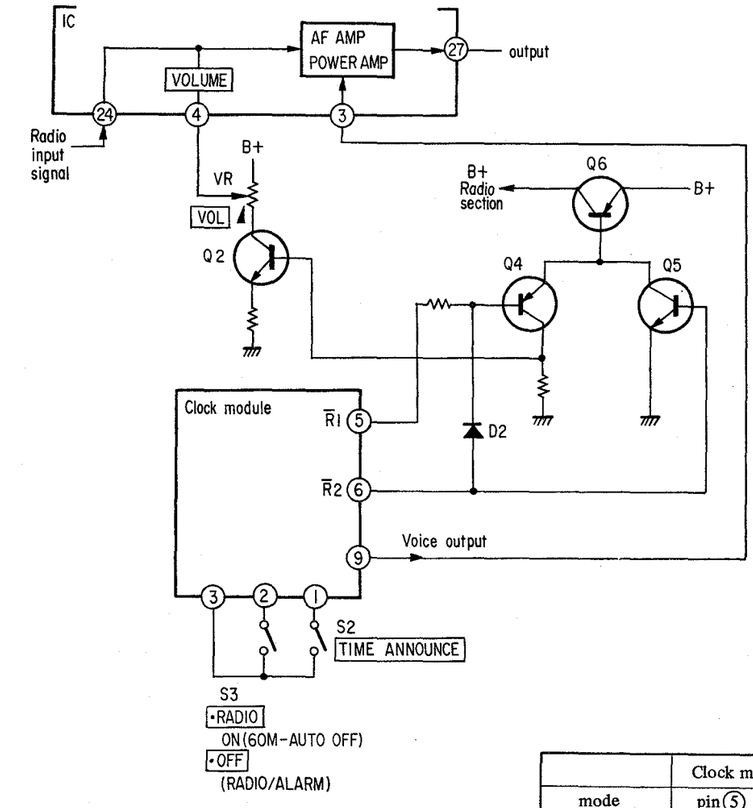
- VOICE mode

During voice (e.g., S2 is turned ON and the time is announced) the clock module output pin (6) goes high.

This turns Q5 ON, Q6 turns ON, and B+ voltage is supplied to the radio section.

At the same time, the high level of pin (6) turns Q4 OFF via D2. Q2 turns OFF, the sound volume becomes minimum and the radio signal is not output.

The voice signal is output from clock module output pin (9), passes through the Q3 filter, and is applied to the power amplifier.

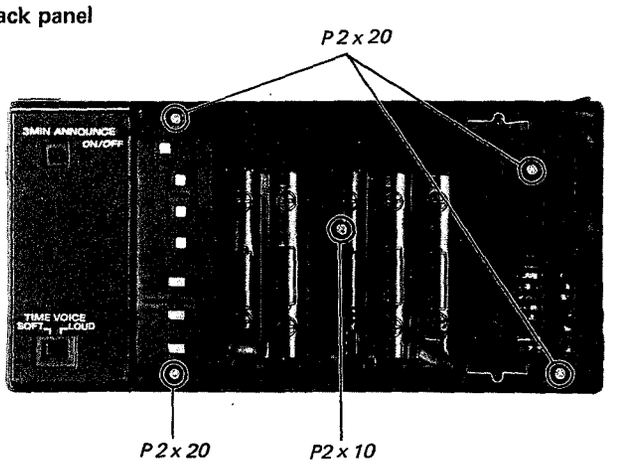


	Clock module output	
mode	pin (5)	pin (6)
radio off voice off	H	L
radio on voice off	L	L
radio off voice on	H	H

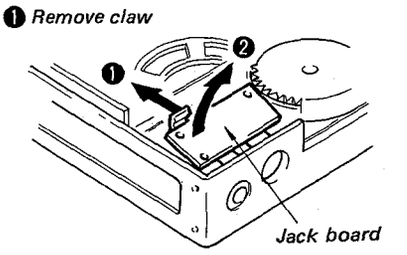
SECTION 2
DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

Remove back panel

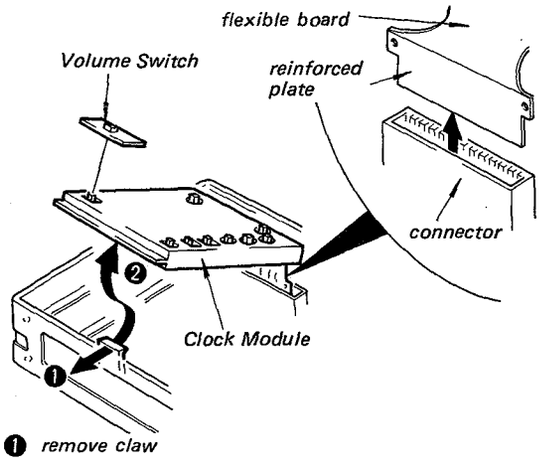


Remove Jack Board

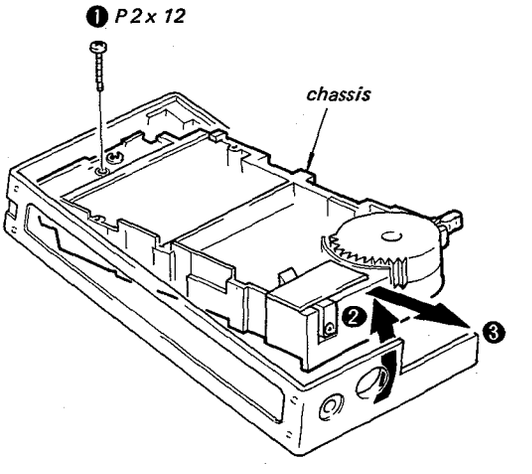


Remove Clock Module

Caution:
When removing the flexible board from the connector, pull the reinforced plate on the end of the flexible board.
Do not pull the flexible board itself.



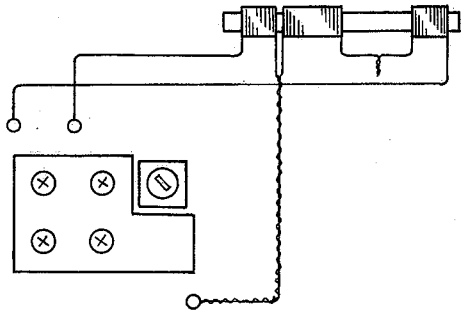
Remove Chassis

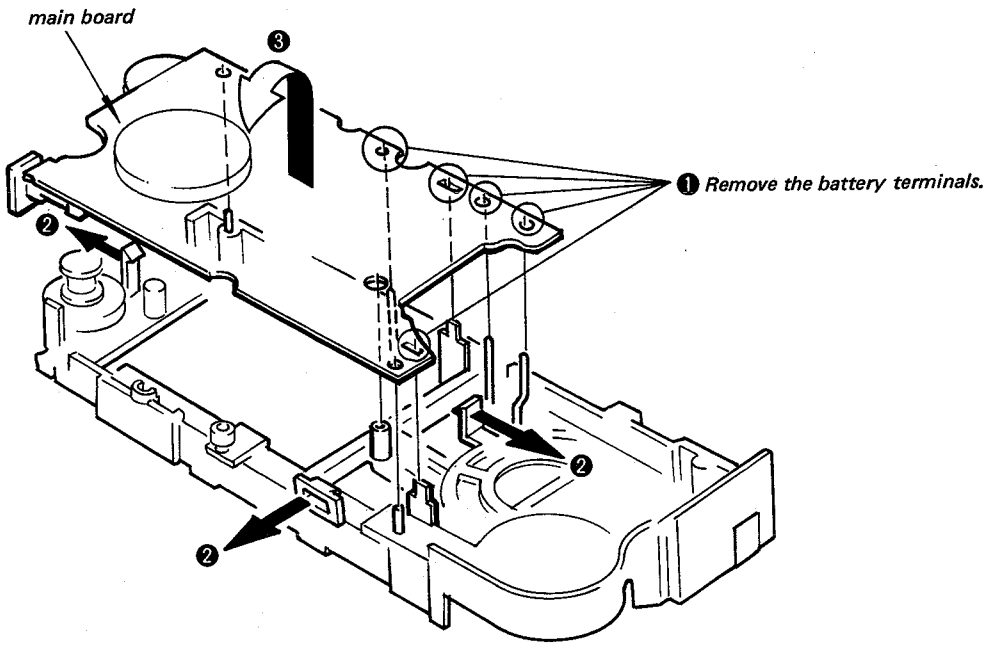


Remove Main Board

1 : Remove the battery terminals.
2 : Release the claw.
3 : Remove the main board.

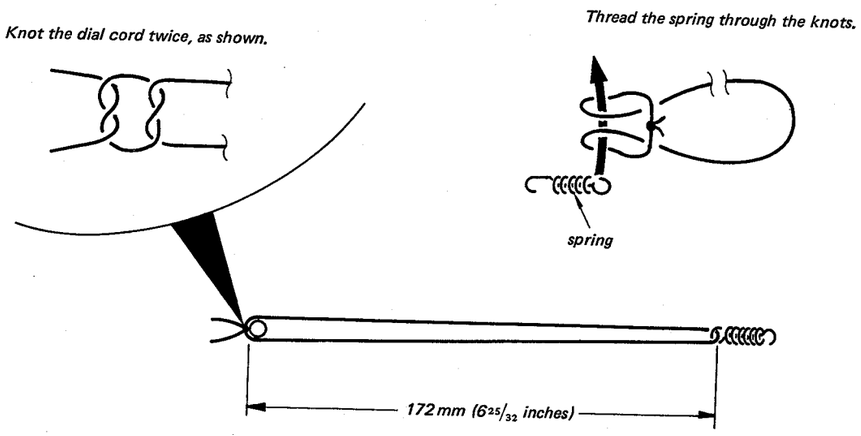
Caution:
If necessary, disconnect AM antenna leads.





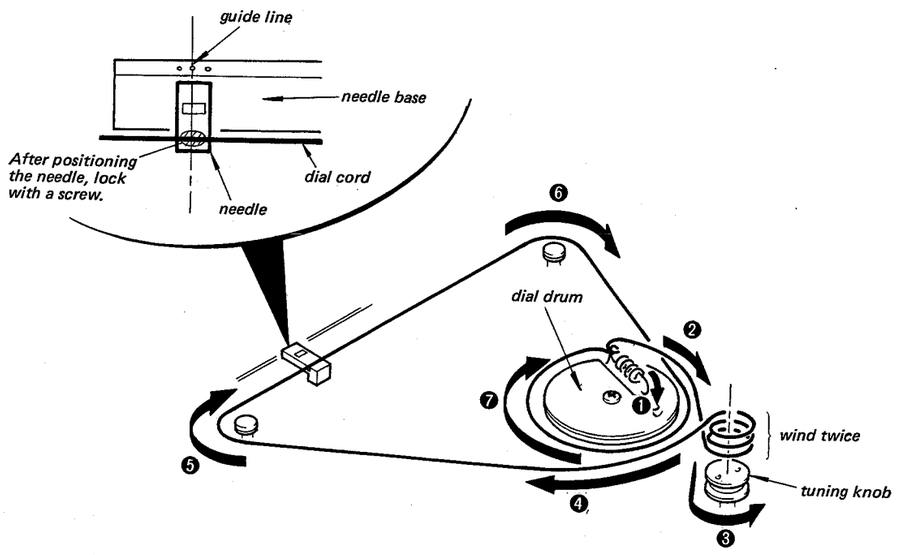
DIAL CORD STRINGING

1. Shape the dial cord



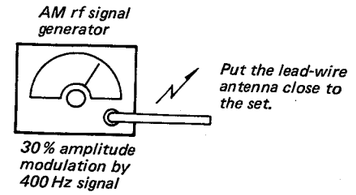
2. Dial Cord Stringing

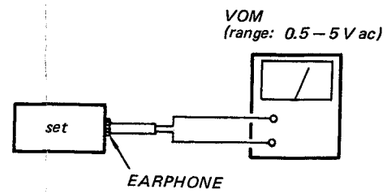
a. Rotate the dial drum clockwise.
b. String the dial cord following steps ①~⑦ as shown.
c. Turn the tuning knob to rotate the dial drum fully counter clockwise.
d. Line up the center of the needle with the guide line.



SECTION 3
ADJUSTMENTS

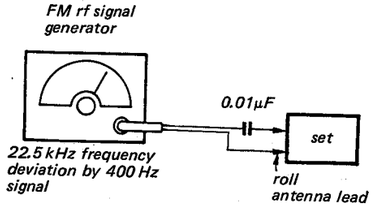
AM





- Repeat the procedures in each adjustment several times, and the frequency coverage and tracking adjustments should be finally done by the trimmer capacitors.

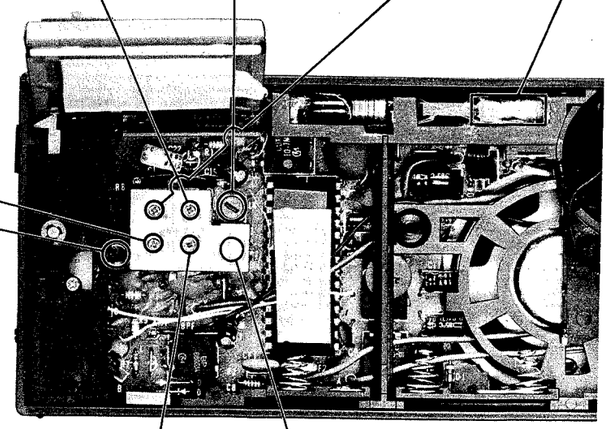
FM



AM FREQUENCY COVERAGE ADJUSTMENT	
Adjust for a maximum reading on VOM	
1,680 kHz	520 kHz
CT4	L4

AM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM	
1,400 kHz	620 kHz
CT3	L1

FM TRACKING ADJUSTMENT	
Adjust for a maximum reading on VOM	
108.5 MHz	CT1
87.1 MHz	L2

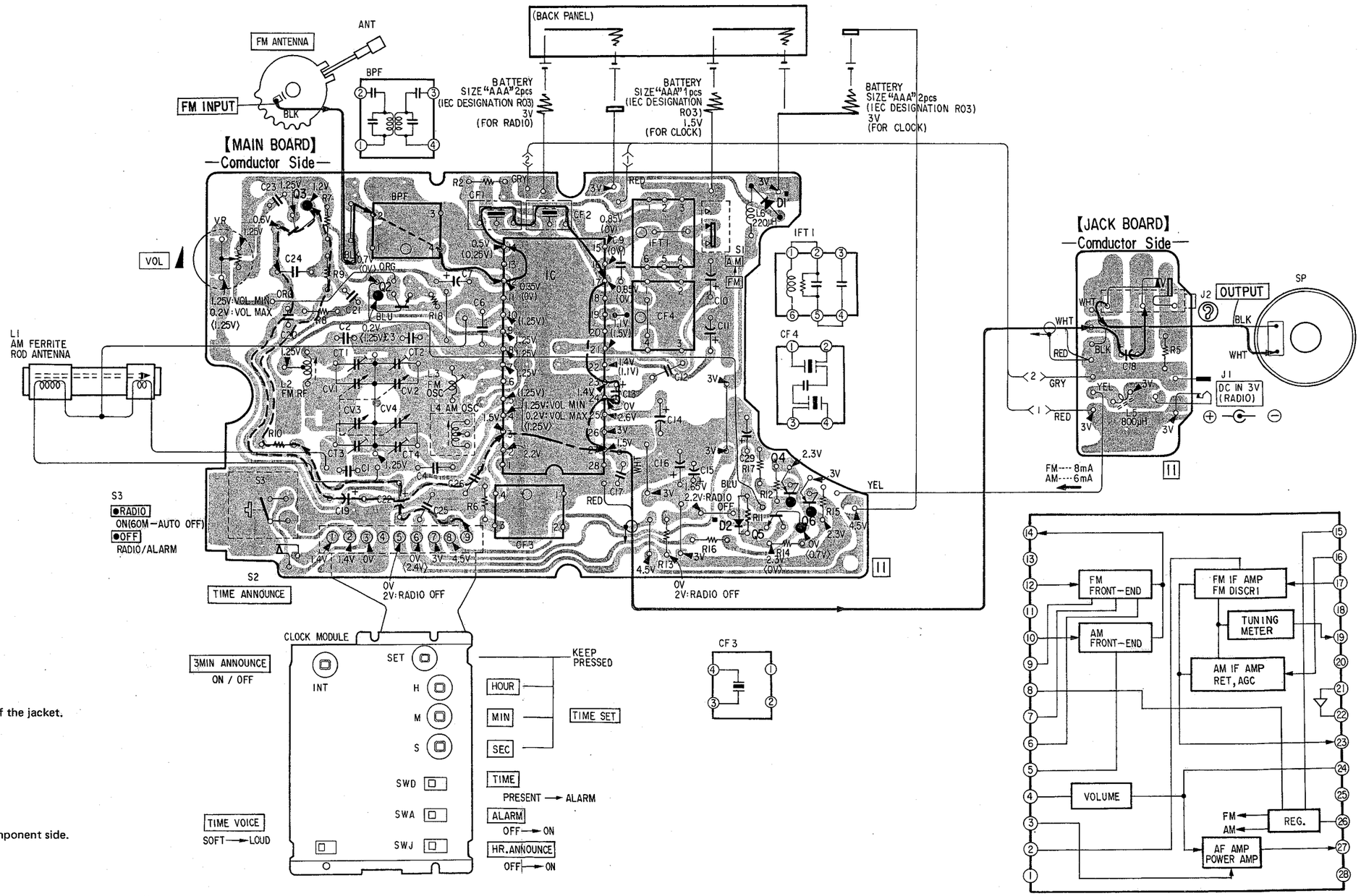


CT2	L3
108.5 MHz	87.1 MHz
Adjust for a maximum reading on VOM	
FM FREQUENCY COVERAGE ADJUSTMENT	

4-1. MOUNTING DIAGRAM

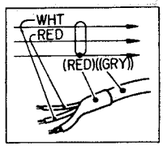
— Conductor Side —

D	1 2
Q IC	3 2 IC 4 6 5



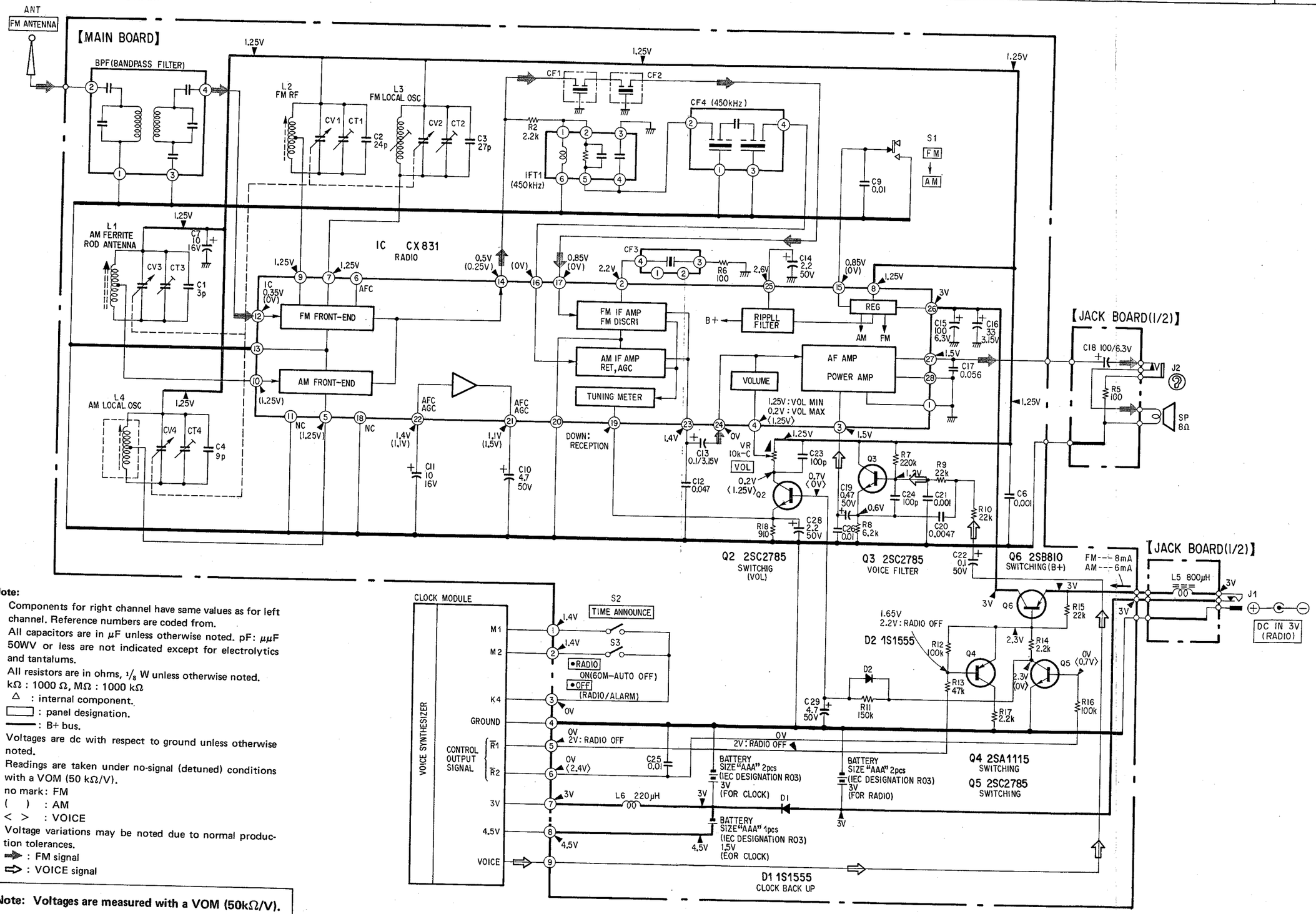
Note:

- Color code of sleeving over the end of the jacket.



- ○— : parts extracted from the component side.
- ▒▒ : B + pattern
- ▬▶ : FM signal
- ▬▶ : VOICE signal

4-2. SCHEMATIC DIAGRAM



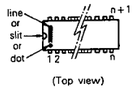
Note:

- Components for right channel have same values as for left channel. Reference numbers are coded from.
- All capacitors are in μF unless otherwise noted. pF: μμF 50WV or less are not indicated except for electrolytics and tantalums.
- All resistors are in ohms, 1/8 W unless otherwise noted. kΩ : 1000 Ω, MΩ : 1000 kΩ
- △ : internal component.
- ▭ : panel designation.
- ——— : B+ bus.
- Voltages are dc with respect to ground unless otherwise noted.
- Readings are taken under no-signal (detuned) conditions with a VOM (50 kΩ/V).
  no mark: FM
  ( ) : AM
  < > : VOICE
- Voltage variations may be noted due to normal production tolerances.
- ➡ : FM signal
- ⇨ : VOICE signal

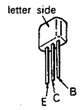
Note: Voltages are measured with a VOM (50kΩ/V).

4-3. SEMICONDUCTOR LEADS LAYOUT

CX-831

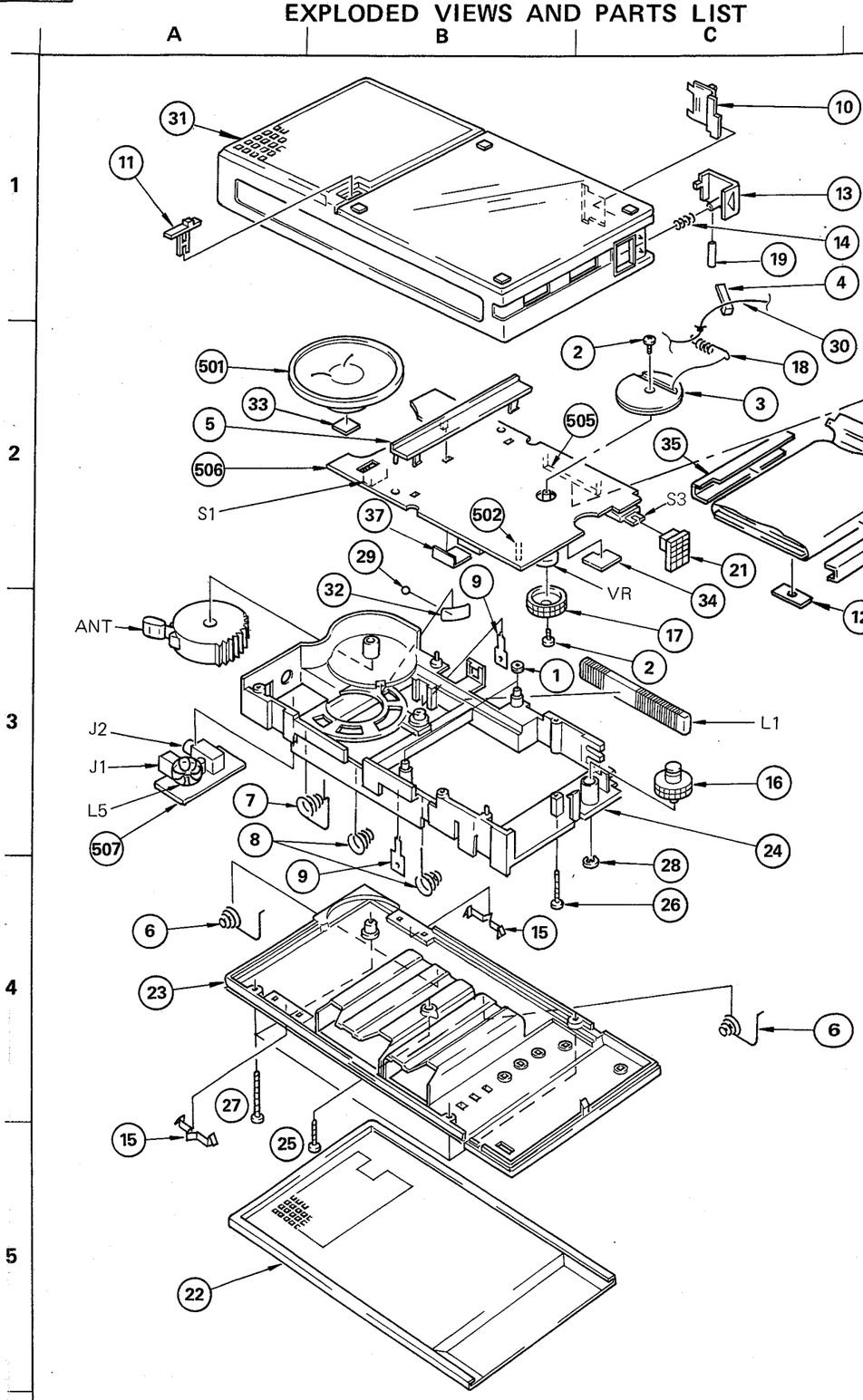


2SA1115
2SB810
2SC2785



1S1555

SECTION 5
EXPLODED VIEWS AND PARTS LIST



GENERAL SECTION

No.	Part No.	Description
1	3-562-207-00	PULLEY, DIAL CORD
2	3-880-990-00	SCREW (1.7X3), FLAT, (+) SPECIAL
3	3-889-801-00	DRUM, DIAL
4	3-890-001-00	POINTER
5	3-890-002-00	TABLE, POINTER
6	3-890-003-00	SPRING (A)
7	3-890-004-00	SPRING (B)
8	3-890-005-00	SPRING
9	3-890-006-00	PLATE, POLE, POSITIVE
10	3-890-007-00	KNOB, LOCK
11	3-890-009-00	KNOB, SELECTION, BAND
12	3-890-010-00	KNOB, SELECTION, VOLUME
13	3-890-011-00	KNOB, MAIN
14	3-890-018-00	SPRING, COMPRESSION (B)
15	3-890-013-00	SPRING (B)
16	3-890-014-00	KNOB, TUNING
17	3-890-015-00	KNOB, CONTROL
18	3-890-016-00	SPRING, TENSION
19	7-626-305-11	PIN, SPRING
20	.....	
21	3-890-019-00	BUTTON, RADIO
22	3-890-021-00	LID, BATTERY CASE
23	3-890-024-11	CABINET (REAR)
24	3-890-025-00	CHASSIS
25	7-621-288-10	SCREW +P 2X10
26	7-621-255-75	SCREW +P 2X12
27	7-621-256-20	SCREW +P 2X20
28	7-624-104-04	STOP RING 2.0, TYPE -E
29	7-671-114-01	STEAL, BALL 4
30	9-911-825-52	STRING, DIAL
31	A-3640-464-A	(US,Canadian,UK).....CABINET (FRONT) ASSY
31	A-3640-487-A	(E).....CABINET (FRONT) ASSY
32	3-890-038-11	SPRING (A)
33	9-911-844-XX	CUSHION, SPEAKER
34 ♦	3-890-037-00	PLATE (A), SHIELD
35 ♦	3-890-034-00	PLATE (B), SHIELD
36 ♦	3-890-035-00	PLATE (C), SHIELD
37 ♦	3-890-048-00	PLATE (D), SHIELD

ACCESSORY & PACKING MATERIAL

Part No.	Description
1-504-059-11	MAGNETIC EARPHONE(ME-20H)
1-528-065-00	BATTERY, SIZE AAA
3-701-622-00	BAG, PLASTIC
3-890-028-00	CARTON, ACCESSORY
3-890-026-00	SHEET, PROTECT
3-890-027-00	(US,E,UK)....SHEET, POP
3-890-059-00	(Canadian)...SHEET, POP
3-890-029-00	CARTON, SELECT
3-890-031-00	CUSHION
3-890-032-00	INDIVIDUAL CARTON
3-890-036-00	CASE, CARRYING
3-890-044-00	SPACER
3-995-914-22	(US,UK).....MANUAL, INSTRUCTION
3-995-914-51	(E,Canadian)...MANUAL, INSTRUCTION
3-998-901-00	LABEL (A,B), SERIAL NUMBER

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- Items marked " ♦ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- Due to standardization, parts with part numbers (Δ-ΔΔΔ-ΔΔΔ-XX or Δ-ΔΔΔΔ-ΔΔΔ-X) may be different from those used in the set.

CAPACITORS:
- All capacitors are in μF. Common capacitors are omitted. Refer to the following lists for their part numbers. MF:μF, PF:μμF.

RESISTORS
- All resistors are in ohms. Common 1/4W, 1/8W and 1/16W carbon resistors are omitted. Refer to the following lists for their part numbers.
- F : nonflammable

COILS
- MMH : mH, UH : μH

SEMICONDUCTORS
In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
501	1-503-114-00	SPEAKER			
502 ♦	;1-508-995-00	PIN, CONNECTOR			
503	1-548-134-00	CLOCK MODULE			
504	1-553-977-00	SWITCH, SLIDE			
505 ♦	;1-561-026-51	CONNECTOR 9P			
506 ♦	;A-3660-344-A	MOUNTED PCB, MAIN			
507 ♦	;1-606-525-00	PC BOARD, JACK			
ANT	1-501-258-00	ANTENNA, ROLL			
BPF	1-235-089-00	FILTER, BAND PASS			
C3	1-102-643-21	CERAMIC	27PF	5%	50V
C4	1-102-747-00	CERAMIC	9PF	0.5PF	50V
C7	1-123-617-00	CAP, ELECT	10MF		16V
C10	1-123-619-00	CAP, ELECT	4.7MF		50V
C11	1-123-617-00	CAP, ELECT	10MF		16V
C14	1-123-612-00	CAP, ELECT	2.2MF		50V
C15	1-123-661-00	CAP, ELECT	100MF		6.3V
C18	1-123-661-00	CAP, ELECT	100MF		6.3V
C19	1-123-610-00	CAP, ELECT	0.47MF		50V
C22	1-123-607-00	CAP, ELECT	0.1MF		50V
C28	1-123-612-00	CAP, ELECT	2.2MF		50V
C29	1-123-619-00	CAP, ELECT	4.7MF		50V
CF1	1-527-931-61	FILTER, CERAMIC			
CF2	1-527-931-61	FILTER, CERAMIC			
CF3	1-527-931-61	FILTER, CERAMIC			
CF4	1-527-876-00	FILTER, CERAMIC			
CV1	1-151-397-00	CAP, TUNING, POLYETHYLENE			
CV2	1-151-397-00	CAP, TUNING, POLYETHYLENE			
CV3	1-151-397-00	CAP, TUNING, POLYETHYLENE			
CV4	1-151-397-00	CAP, TUNING, POLYETHYLENE			

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D1	8-719-815-55	DIODE 1S1555
D2	8-719-815-55	DIODE 1S1555
D3	8-719-815-55	DIODE 1S1555
D4	8-719-815-55	DIODE 1S1555
IC1	8-750-000-69	IC CX-831
IFT1	1-404-358-00	TRANSFORMER, IF
J1	1-507-723-00	JACK, EXTENTION POWER
J2	1-507-562-00	JACK
L1	1-401-950-00	ANTENNA, FERRITE-ROD (MW)
L2	1-405-818-00	COIL, FM OSCILLATOR
L3	1-420-913-00	COIL, AIR-CORE
L4	1-405-989-00	COIL, OSC
L5	1-421-500-00	COIL, CHOKE
L6	1-408-579-31	MICRO INDUCTOR 220MH
Q1	8-729-178-54	TRANSISTOR 2SC2785F
Q2	8-729-178-54	TRANSISTOR 2SC2785F
Q3	8-729-178-54	TRANSISTOR 2SC2785F
Q4	8-729-612-77	TRANSISTOR 2SA1027R
Q5	8-729-178-54	TRANSISTOR 2SC2785
Q6	8-729-181-05	TRANSISTOR 2SB810
S1	1-553-510-00	SWITCH, SLIDE (FM/AM)
S2	1-553-978-00	SWITCH, LEAF
S3	1-553-976-00	SWITCH, PUSH
VR	1-228-526-00	RES, VAR, CARBON 10K (VOL)
	1-553-977-00	SWITCH, SLIDE (TIME/ALARM/HR.ANNOUNCE/TIME VOICE)
	1-554-084-00	SWITCH, RUBBER KEY (3 MIN ANNOUNCE/TIME SET)

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COILS

- MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:
UA···: μA···, UPA···: μPA···, UPC···: μPC, UPD···: μPD···

1/8 WATT CARBON RESISTOR

Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.	Ω	Part No.
2.0	—	13	1-246-821-00	91	1-246-831-00	620	1-246-841-00	4.3k	1-246-851-00	30k	1-246-861-00	200k	1-246-871-00
2.2	1-246-751-00	15	1-246-761-00	100	1-246-771-00	680	1-246-781-00	4.7k	1-246-791-00	33k	1-246-801-00	220k	1-246-811-00
2.4	—	16	1-246-822-00	110	1-246-832-00	750	1-246-842-00	5.1k	1-246-852-00	36k	1-246-862-00	240k	1-247-054-00
2.7	1-246-752-00	18	1-246-762-00	120	1-246-772-00	820	1-246-782-00	5.6k	1-246-792-00	39k	1-246-802-00	270k	1-247-046-00
3.0	—	20	1-246-823-00	130	1-246-833-33	910	1-246-843-00	6.2k	1-246-853-00	43k	1-246-863-00	300k	1-247-055-00
3.3	1-246-753-00	22	1-246-763-00	150	1-246-773-00	1.0k	1-246-783-00	6.8k	1-246-793-00	47k	1-246-803-00	330k	1-247-047-00
3.6	—	24	1-246-824-00	160	1-246-834-00	1.1k	1-246-844-00	7.5k	1-246-854-00	51k	1-246-864-00	360k	1-247-056-00
3.9	1-246-754-00	27	1-246-764-00	180	1-246-774-00	1.2k	1-246-784-00	8.2k	1-246-794-00	56k	1-246-804-00	390k	1-247-048-00
4.3	—	30	1-246-825-00	200	1-246-835-00	1.3k	1-246-845-00	9.1k	1-246-855-00	62k	1-246-865-00	430k	1-247-057-00
4.7	1-246-755-00	33	1-246-765-00	220	1-246-775-00	1.5k	1-246-785-00	10k	1-246-795-00	68k	1-246-805-00	470k	1-247-049-00
5.1	—	36	1-246-826-00	240	1-246-836-00	1.6k	1-246-846-00	11k	1-246-856-00	75k	1-246-866-00	510k	1-247-058-00
5.6	1-246-756-00	39	1-246-766-00	270	1-246-776-00	1.8k	1-246-786-00	12k	1-246-796-00	82k	1-246-806-00	560k	1-247-050-00
6.2	—	43	1-246-827-00	300	1-246-837-00	2.0k	1-246-847-00	13k	1-246-857-00	91k	1-246-867-00	620k	1-247-059-00
6.8	1-246-757-00	47	1-246-767-00	330	1-246-777-00	2.2k	1-246-787-00	15k	1-246-797-00	100k	1-246-807-00	680k	1-247-051-00
7.5	1-246-818-00	51	1-246-828-00	360	1-246-838-00	2.4k	1-246-848-00	16k	1-246-858-00	110k	1-246-868-00	750k	1-247-060-00
8.2	1-246-758-00	56	1-246-768-00	390	1-246-778-00	2.7k	1-246-788-00	18k	1-246-798-00	120k	1-246-808-00	820k	1-247-052-00
9.1	1-246-819-00	62	1-246-829-00	430	1-246-839-00	3.0k	1-246-849-00	20k	1-246-859-00	130k	1-246-869-00	910k	1-247-061-00
10	1-246-759-00	68	1-246-769-00	470	1-246-779-00	3.3k	1-246-789-00	22k	1-246-799-00	150k	1-246-809-00	1 M	1-247-053-00
11	1-246-820-00	75	1-246-830-00	510	1-246-840-00	3.6k	1-246-850-00	24k	1-246-860-00	160k	1-246-870-00		
12	1-246-760-00	82	1-246-770-00	560	1-246-780-00	3.9k	1-246-790-00	27k	1-246-800-00	180k	1-246-810-00		

CERAMIC CAPACITORS

RATING							
CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (pF)	50 VOLT. PART No.	CAP. (μF)	50 VOLT. PART No.
0.5	1-101-837-00	22	1-102-959-00	150	1-101-361-00	0.001	1-102-074-00
0.75	1-101-586-00	24	1-102-960-00	160	1-101-367-00	0.0012	1-102-118-00
1.0	1-102-934-00	27	1-102-961-00	180	1-102-976-00	0.0015	1-102-119-00
1.5	1-101-576-00	30	1-102-962-00	200	1-102-977-00	0.0018	1-102-120-00
2.0	1-102-935-00	33	1-102-963-00	220	1-102-978-00	0.0022	1-102-121-00
3	1-102-936-00	36	1-102-964-00	240	1-102-979-00	0.0027	1-102-122-00
4	1-102-937-00	39	1-102-965-00	270	1-102-980-00	0.0033	1-102-123-00
5	1-102-942-00	43	1-102-966-00	300	1-102-981-00	0.0039	1-102-124-00
6	1-102-943-00	47	1-101-880-00	330	1-102-820-00	0.0047	1-102-125-00
7	1-102-944-00	51	1-101-882-00	360	1-102-821-00	0.0056	1-102-126-00
8	1-102-945-00	56	1-101-884-00	390	1-102-822-00	0.0068	1-102-127-00
9	1-102-946-00	62	1-101-886-00	430	1-102-823-00	0.0082	1-102-128-00
10	1-102-947-00	68	1-101-888-00	470	1-102-824-00	0.01	1-102-129-00
11	1-102-948-00	75	1-101-890-00	510	1-101-059-00	0.022	1-101-005-00
12	1-102-949-00	82	1-102-971-00	560	1-102-115-00	0.047	1-101-006-00
13	1-102-950-00	91	1-102-972-00	680	1-102-116-00		
15	1-102-951-00	100	1-102-973-00	820	1-102-117-00		
16	1-102-952-00	110	1-102-815-00				
18	1-102-953-00	120	1-102-816-00				
20	1-102-958-00	130	1-101-081-00				

0.001μF = 1,000pF

CERAMIC (SEMICONDUCTOR) CAPACITORS

RATING → : Use the high voltage rated one.					
CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.	CAP. (μF)	25 VOLT. PART No.	50 VOLT. PART No.
0.001	→	1-161-039-00	0.018	1-161-016-00	1-161-054-00
0.0012	→	1-161-040-00	0.022	1-161-017-00	1-161-055-00
0.0015		1-161-041-00	0.027	1-161-018-00	1-161-056-00
0.0018		1-161-042-00	0.033	1-161-019-00	1-161-057-00
0.0022		1-161-043-00	0.039	1-161-010-00	1-161-058-00
0.0027	→	1-161-044-00	0.047	1-161-021-00	1-161-059-00
0.0033	→	1-161-045-00	0.056	→	1-161-060-00
0.0039	→	1-161-046-00	0.068	→	1-161-061-00
0.0047	→	1-161-047-00	0.082	1-161-024-00	1-161-062-00
0.0056	→	1-161-048-00	0.1	1-161-025-00	1-161-063-00
0.0068	→	1-161-049-00			
0.0082	1-161-012-00	1-161-050-00			
0.01	1-161-013-00	1-161-051-00			
0.012	→	1-161-052-00			
0.015	1-161-015-00	1-161-053-00			